

# Modern DNA techniques applied to nineteenth-century potatoes

September 19 2012

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Credit: University of Hertfordshire

Researchers led by Professor Bruce Fitt, now at the University of Hertfordshire, have used modern DNA techniques on late nineteenth-century potatoes to show how the potato blight may have survived between cropping seasons after the Irish potato famine of the 1840s.

Late blight of potato is caused by the microorganism, *Phytophthora*

infestans, which rapidly destroys the leaves of [potato crops](#) and was responsible for the infamous [Irish potato famine](#) of the 1840s that left over one million people dead and another one million Irish emigrating. With growing concerns over [food shortages](#) and [climate change](#), late blight remains a serious disease problem in current potato production and has also emerged as a significant disease threat to the organic tomato industry.

In the research paper published in [Plant Pathology](#), DNA was extracted from the Rothamsted potato samples that had been dried, ground and stored in glass bottles in the nineteenth century. The DNA was then analysed for the presence of the potato blight pathogen.

Bruce Fitt, Professor of Plant Pathology at the University of Hertfordshire and formerly at Rothamsted Research, said: "It was the foresight of two nineteenth-century plant scientists to archive potato samples from their experiment that has enabled us to apply modern DNA techniques to better understand late potato blight and the implications for today's food security. The analysis of these late nineteenth-century potato samples is the earliest proof of how this disease survived between seasons in England."

The findings of this research has proved that the DNA technique applied to the potato samples is a very useful tool in plant disease diagnosis to test seed potatoes or [tomato transplants](#) for the presence of the late blight pathogen. This technique can be further developed for testing for other diseases found in different plants which affect food production.

Bruce continued: "Using modern DNA techniques to detect and quantify the pathogen in potatoes enables us to better understand the spread of potato late blight. This disease is still a serious threat to worldwide potato production."

**More information:** Ristaino, J. B., Hu, C. H. and Fitt, B. D. L. (2012), Evidence for presence of the founder Ia mtDNA haplotype of *Phytophthora infestans* in 19th century potato tubers from the Rothamsted archives. *Plant Pathology*. doi: [10.1111/j.1365-3059.2012.02680.x](https://doi.org/10.1111/j.1365-3059.2012.02680.x)

Provided by University of Hertfordshire

Citation: Modern DNA techniques applied to nineteenth-century potatoes (2012, September 19) retrieved 16 June 2024 from <https://phys.org/news/2012-09-modern-dna-techniques-nineteenth-century-potatoes.html>

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